

# Space-Hardened Seed Laser for Use in High Spectral Resolution Lidar Systems, Phase II

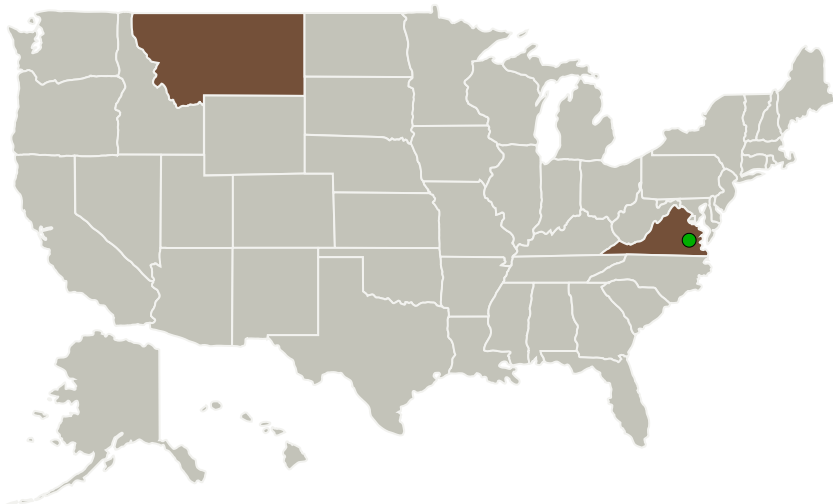
Completed Technology Project (2017 - 2019)



## Project Introduction

The overall goal of the SBIR effort to develop a fully packaged, environmentally hardened, diode-based, locked wavelength, seed laser for seeding next generation Nd:YAG lasers currently being developed for future space-based, high spectral resolution Lidar (HSRL) measurements. The Phase I effort successfully demonstrated that a diode-based, wavelength-locked seed laser can provide the spectral purity required for HSRL systems, and as part of the effort developed a baseline design for a seed laser module with a defined footprint that will integrate into NASAs High Energy UV Demonstrator. A direct diode, wavelength locked seed laser will reduce the overall size weight and power (SWaP) requirements of the HSRL laser transmitter, and accelerates the establishment of a US manufacturer of compact, robust, space-qualifiable diode-based seed lasers for use in future HSRL missions being developed at the NASA Langley Research Center (LaRC), thus directly addressing the need for developing compact, efficient, lidar component technologies for use in space-based environments.

## Primary U.S. Work Locations and Key Partners



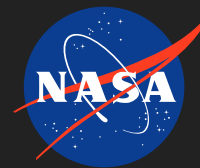
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Organizations Performing Work	Role	Type	Location
ADVR, Inc.	Lead Organization	Industry	Bozeman, Montana
● Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia

Primary U.S. Work Locations	
Montana	Virginia

## Project Transitions

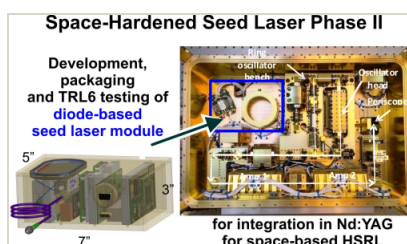
▶ **April 2017:** Project Start

✓ **April 2019:** Closed out

**Closeout Documentation:**

- Final Summary Chart(<https://techport.nasa.gov/file/140819>)

## Images

**Briefing Chart Image**

Space-Hardened Seed Laser for Use in High Spectral Resolution Lidar Systems, Phase II Briefing Chart Image

(<https://techport.nasa.gov/image/128611>)

**Final Summary Chart Image**

Space-Hardened Seed Laser for Use in High Spectral Resolution Lidar Systems, Phase II

(<https://techport.nasa.gov/image/133365>)

## Organizational Responsibility

**Responsible Mission Directorate:**

Space Technology Mission Directorate (STMD)

**Lead Organization:**

ADVR, Inc.

**Responsible Program:**

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

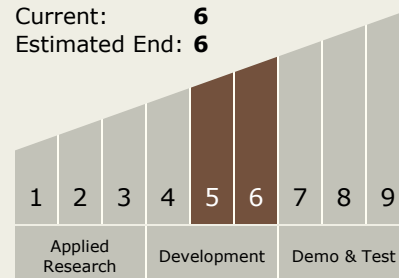
Carlos Torrez

**Principal Investigator:**

Shirley Mcneil

## Technology Maturity (TRL)

Start: 5  
Current: 6  
Estimated End: 6



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## Technology Areas

### Primary:

- TX08 Sensors and Instruments
  - └ TX08.1 Remote Sensing Instruments/Sensors
    - └ TX08.1.5 Lasers

## Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System